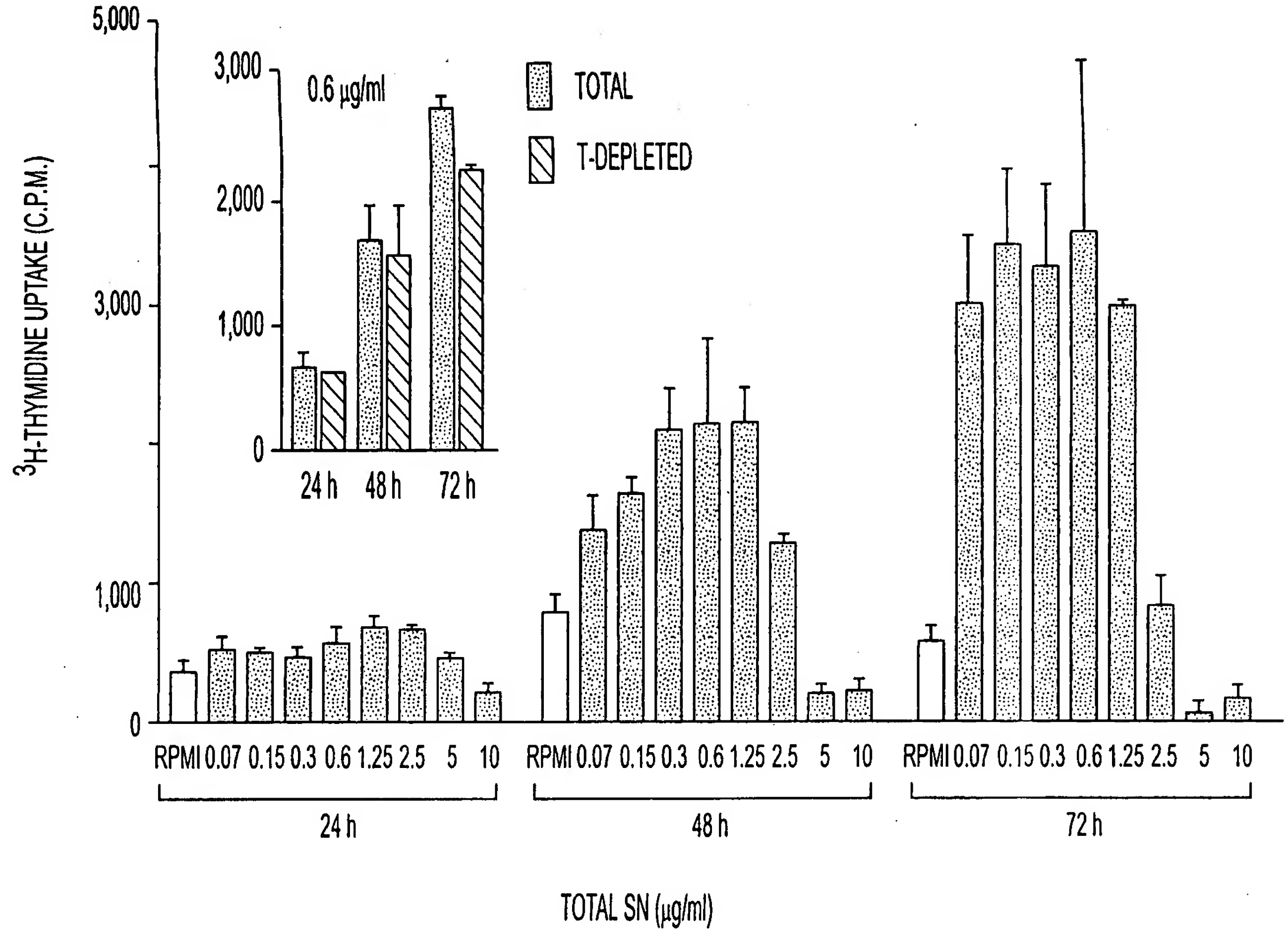

5,000
3,000
1,000
0
3H-THYMIDINE UPTAKE (C.P.M.)
3,000
2,000
1,000
0
0.6 µg/ml
24 h 48 h 72 h
TOTAL
T-DEPLETED
RPMI 0.07 0.15 0.3 0.6 1.25 2.5 5 10
RPMI 0.07 0.15 0.3 0.6 1.25 2.5 5 10
RPMI 0.07 0.15 0.3 0.6 1.25 2.5 5 10
24 h
48 h
72 h
TOTAL SN (µg/ml)

FIG. 1A

Replacement Figure 1B
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

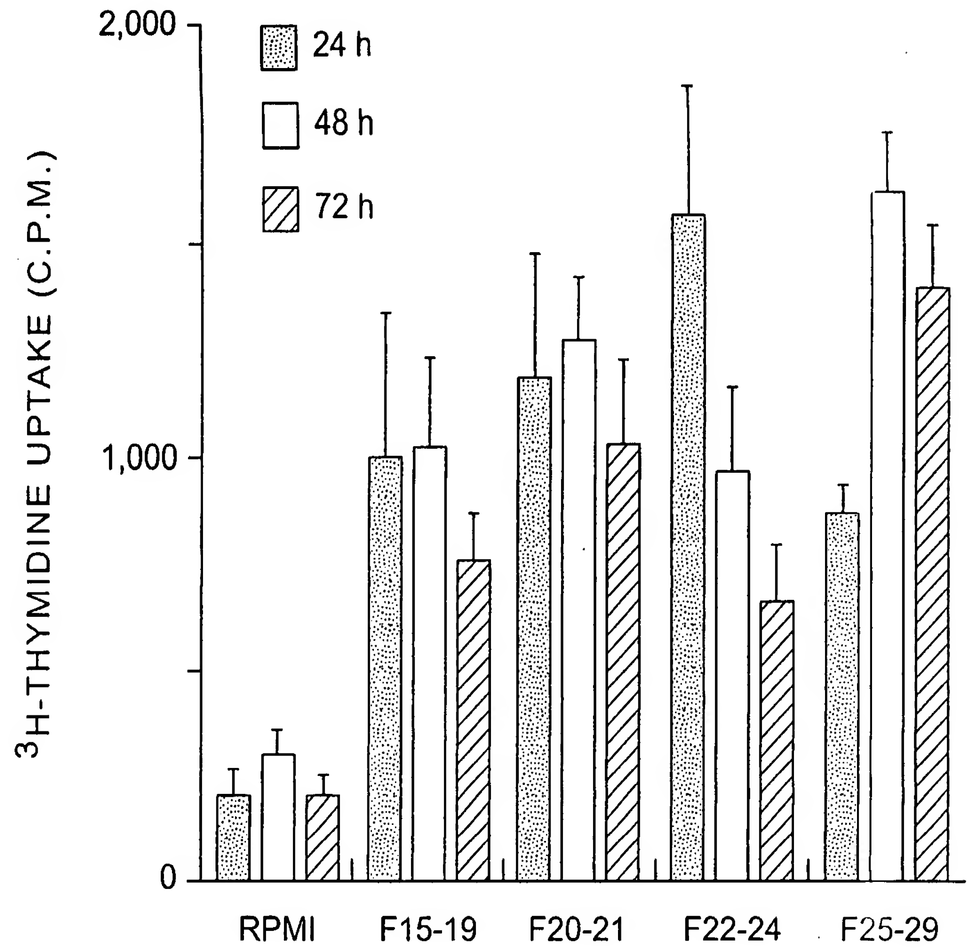


FIG. 1B

Replacement Figure 1C
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

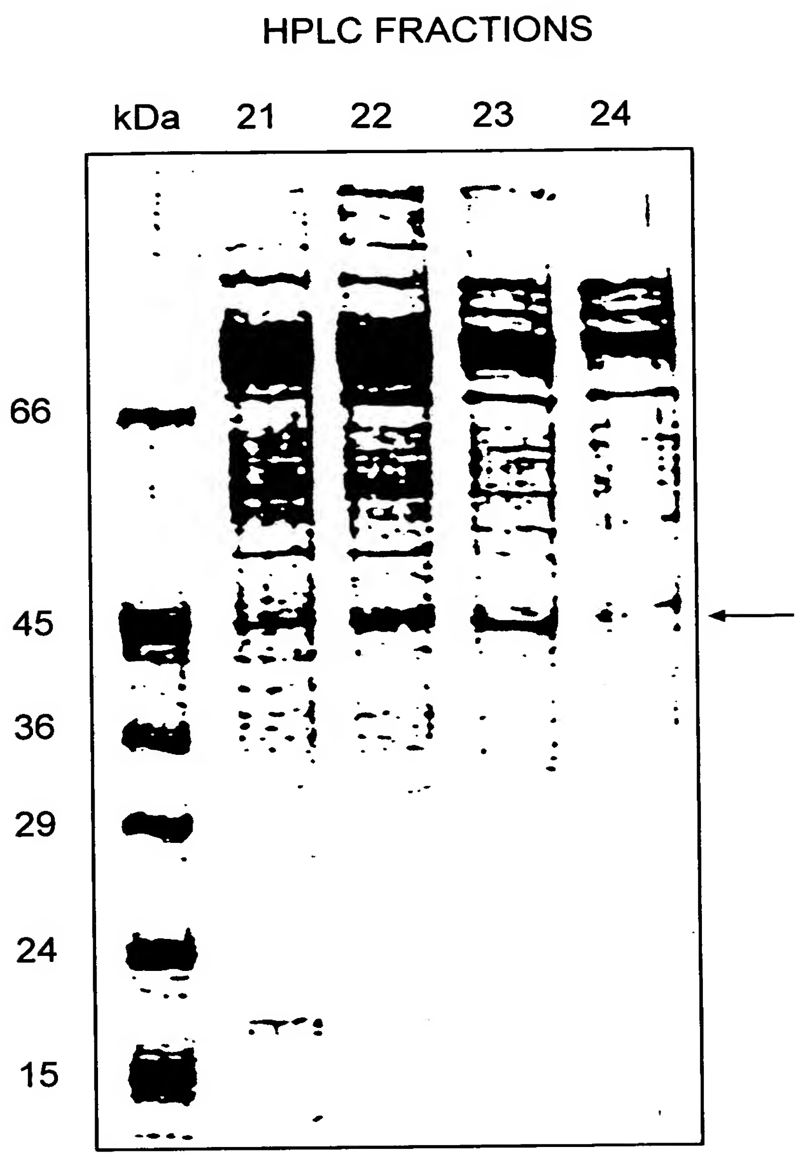


FIG. 1C

```
Tc  MRKSVCPKQKFFFSAFPFFFFFCVFPLISRTGQEKLLFDQKYKIIKGEKKEKKKNQRANRREHQQKREIMRFKKS  75
Cs  ---------------------------------------------------------------------MKFSKG   6
Pa  ------------------------------------------------------------------------MQR   3

Tc  FTCIDMHTEGEAARIVTSGLPHIPGSNMAEKKAYLQENMDYLRRGIMLEPRGHDDMFGAFLFDPIEEGADLGMVF  150
Cs  IHAIDSHTMGEPTRIVVGGIPQINGETMADKKKYLEDNLDYVRTALMHEPRGHNDMFGSIITSSNNKEADFGIIF   81
Pa  IRIIDSHTGGEPTRLVIGGFPDLGQGDMAERRRLLGERHDAWRAACILEPRGSDVLVGALLCAPVDPEACAGVIF   78

Tc  MDTGGYLNMCGHNSIAAVTAAVETGIVSVPAKATNVPVVLDTPAGLVRGTAHLQSGTESEVSNASIINVPSFLYQ  225
Cs  MDGGGYLNMCGHGSIGAATVAVETGMVEMVEPVTNIN--MEAPAGLIKAKVMVEN---EKVKEVSITNVPSFLYM  151
Pa  FNNSGYLGMCGHGTIGLVASLAHLGRIGPGV------HRIETPVGEVEATLH-------EDGSVSVRNVPAYRYR  140

Tc  QDVVVVLPKPYGEVRVDIAFGGNFFAIVPAEQLGIDISVQNLSRLQEAGELLRTEINRSVKVQHPQLPHINTVDC  300
Cs  EDAKLEVPSLNKTITFDISFGGSFFAIIHAKELGVKVETSQVDVLKKLGIEIRDLINEKIKVQHPELEHIKTVDL  226
Pa  RQVSVEVPGI-GRVSGDIAWGGNWFFLVAGH--GQRLAGDNLDALTAYTVAVQQALDD----QDIRGEDGGAIDH  208

Tc  VEIYGPPTNPEANYKNVVIFGNRQADR SPCGT GTSAKMATLYAKGQLRIGETFVYESILGSLFQGRV--LGEE  371
Cs  VEIYDEPSNPEATYKNVVIFGQGQVDR SPCGT GTSAKLATLYKKGHLKIDEKFVYESITGTMFKGRV--LEET  297
Pa  IELFAD--DPHADSRNFVLCPGKAYDR SPCGT GTSAKLACLAADGKLLPGQPWRQASVIGSQFEGRYEWLDGQ  279

Tc  RIPGVKVPVTKDAEEGMLVVTAEITGKAFIMGFNTMLFDPTDPFKNGFTLKQ*  423
Cs  KVGEFD-----------AIIPEITGGAYITGFNHFVIDPEDPLKYGFTV*--  335
Pa  PGGPIVPTIRGRAHVSAEATLLLADDDPFAWGIRR*-----------------  314
```

FIG. 2

Replacement Figure 3A
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

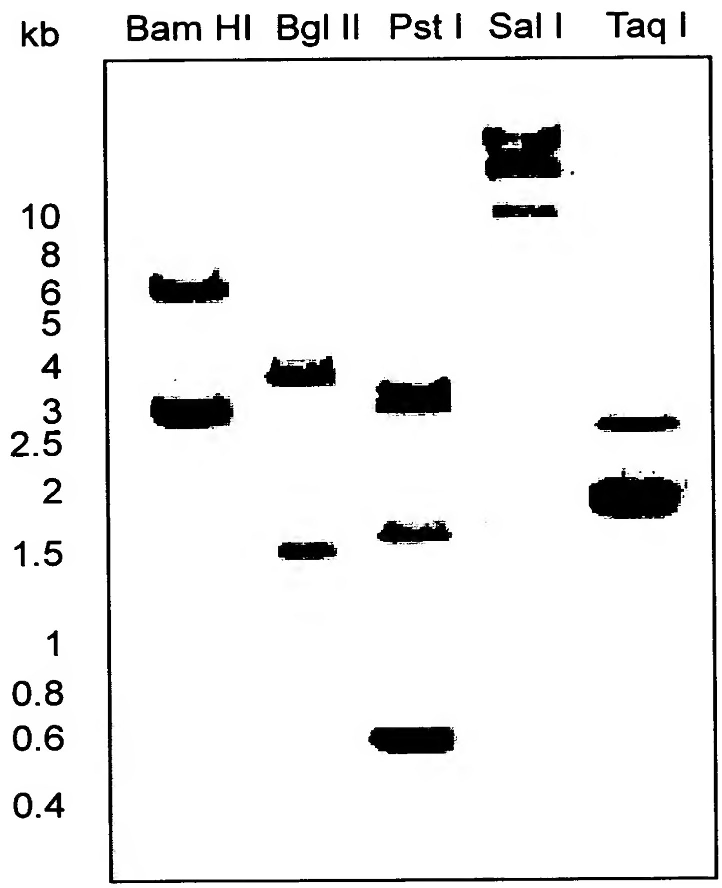


FIG. 3A

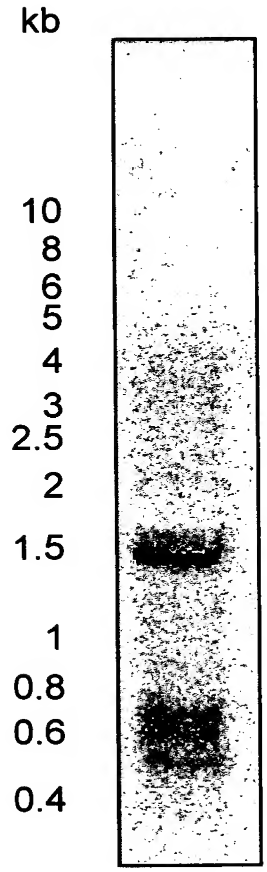


FIG. 3B

Replacement Figure 3C
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

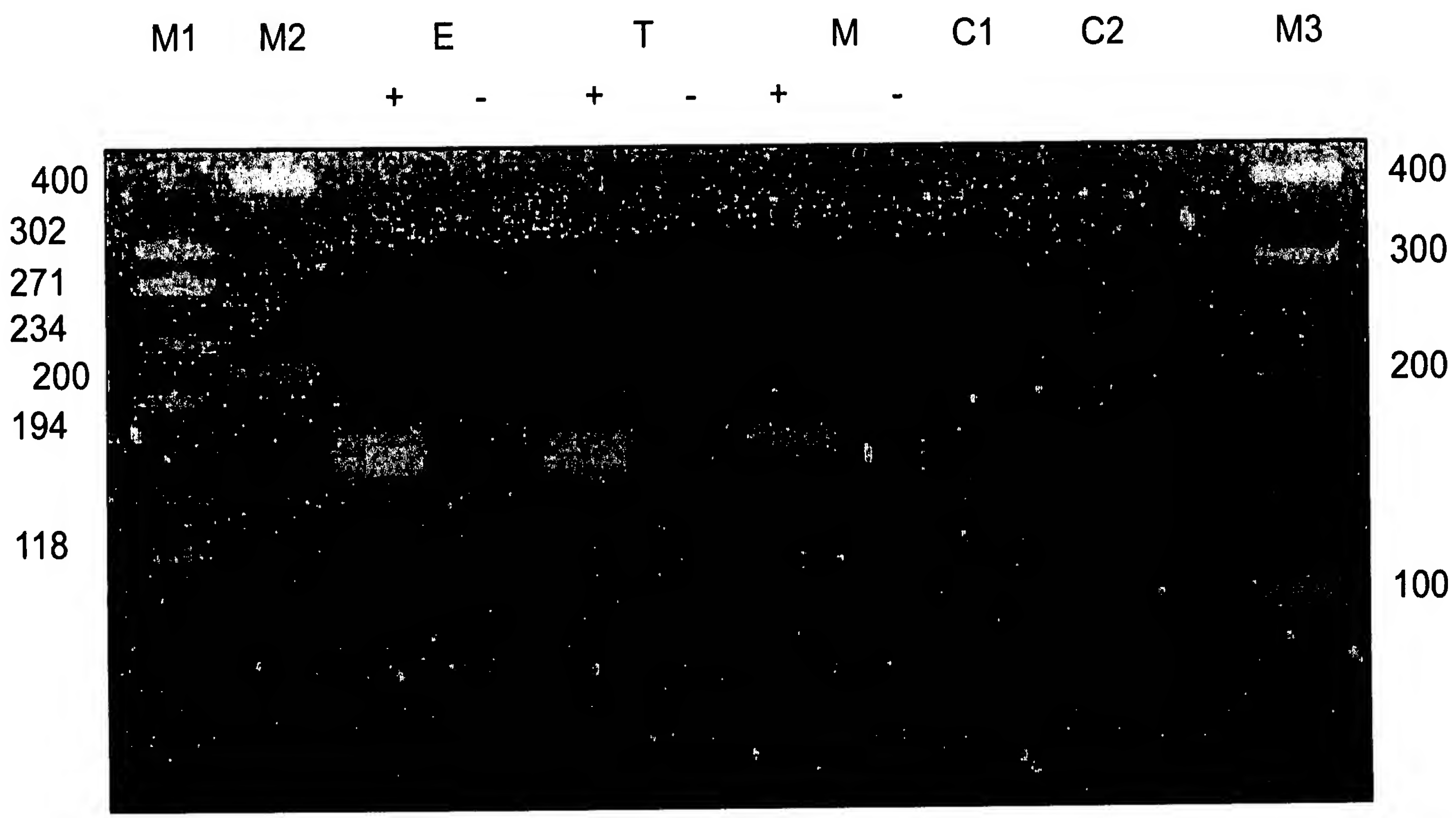


FIG. 3C

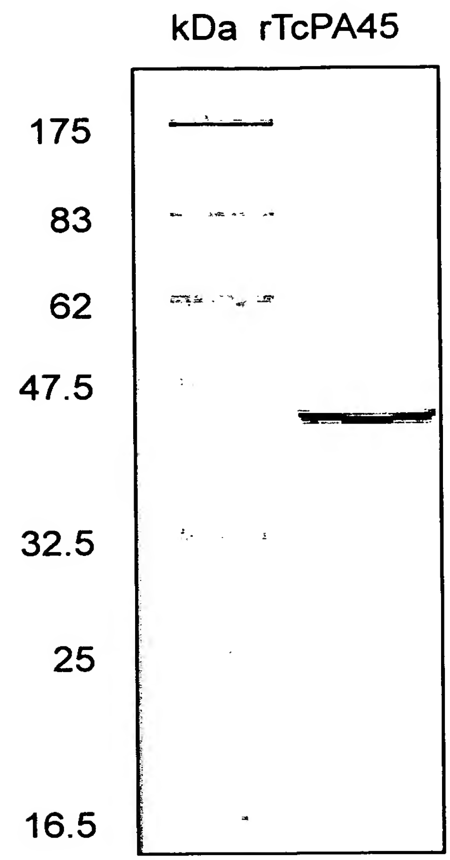


FIG. 4A

Replacement Figure 4B
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

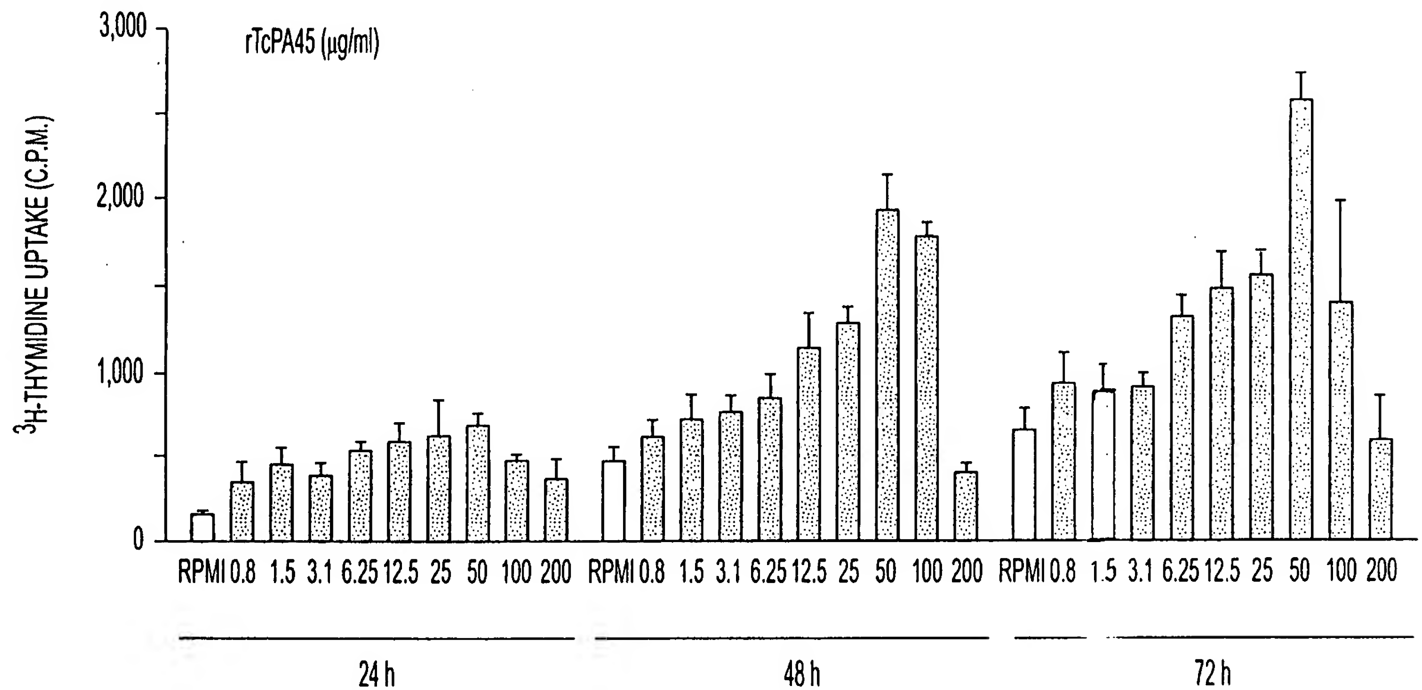


FIG. 4B

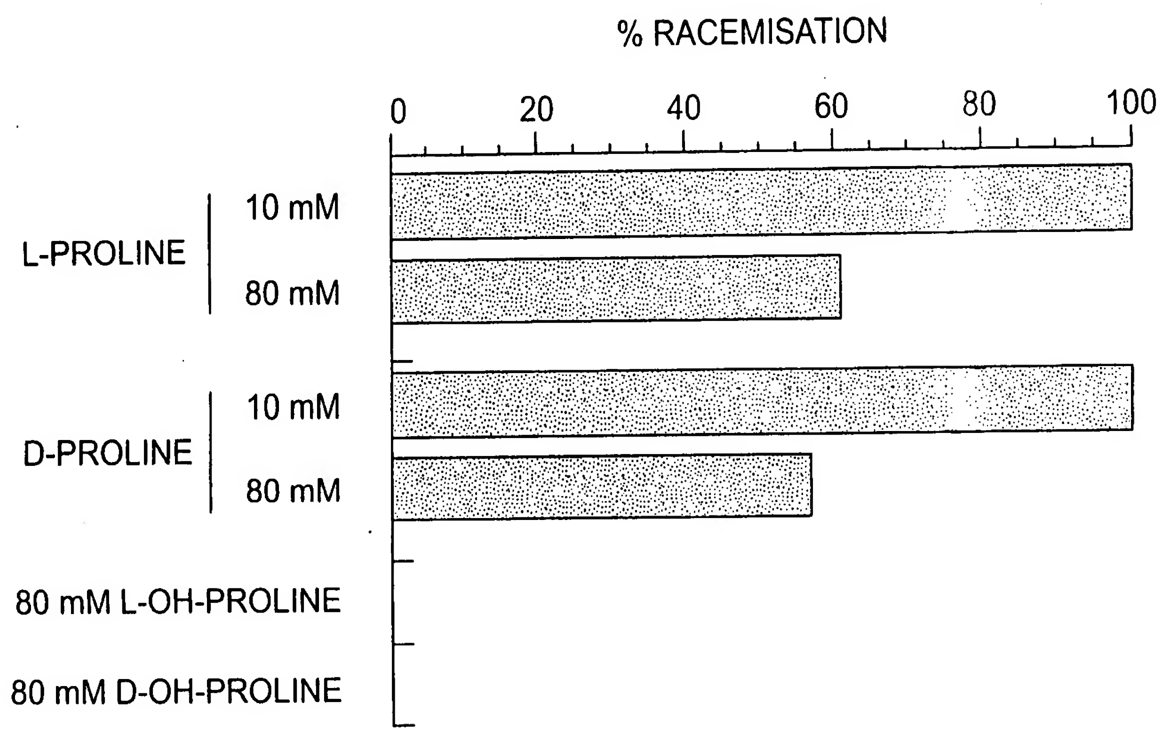

% RACEMISATION
0
20
40
60
80
100
L-PROLINE
10 mM
80 mM
D-PROLINE
10 mM
80 mM
80 mM L-OH-PROLINE
80 mM D-OH-PROLINE

FIG. 4C

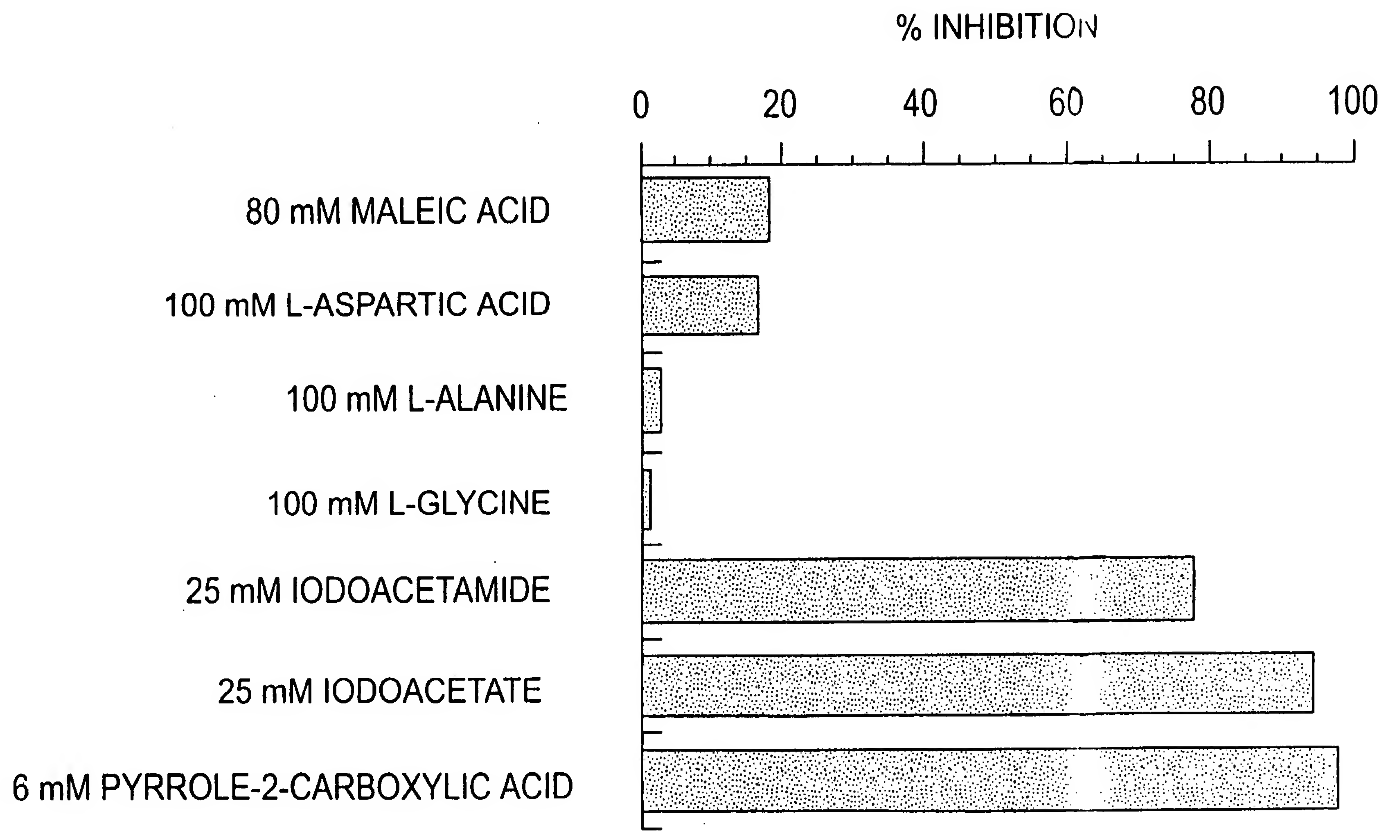

% INHIBITION
0
20
40
60
80
100
80 mM MALEIC ACID
100 mM L-ASPARTIC ACID
100 mM L-ALANINE
100 mM L-GLYCINE
25 mM IODOACETAMIDE
25 mM IODOACETATE
6 mM PYRROLE-2-CARBOXYLIC ACID

FIG. 4D

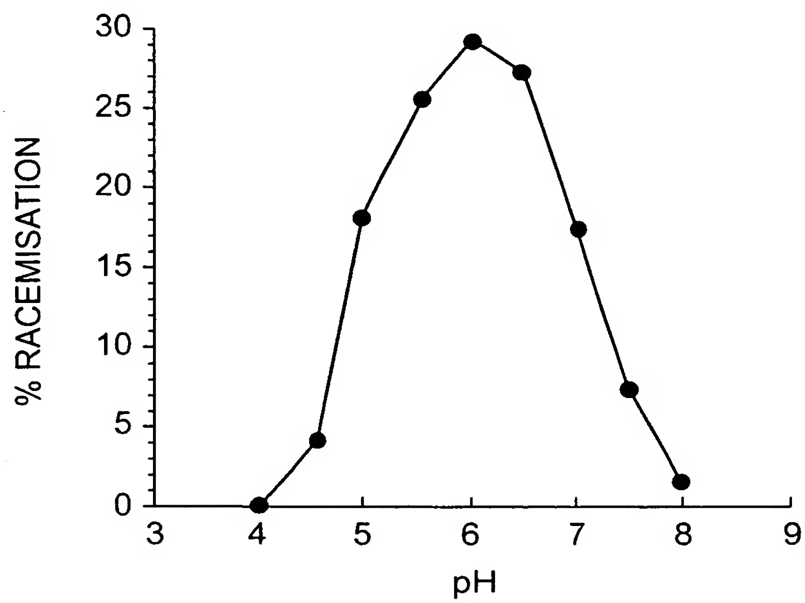


FIG. 4E

Replacement Figure 5A
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

POLYPYRIMIDINE RICH REGION

SPLICE LEADER
ACCEPTOR SITES

SIGNAL

```
CCTTTTTCTTTTTAAAAACAAAAAAAATTCCGGGGGAATATGGAACAGGGTATATGCGTAAAAGTGTCTGTCCCAAACAAAAATTTTTT   90
                                                                  M  R  K  S  V  C  P  K  Q  K  F  F   12
TTTTCCGCCTTCCCATTTTTTTTTTTTTTTTGTGTGTTTCCCTTGATCTCTCGAACAGGGCAGGAAAAGCTTCTGTTTGACCAAAAATAT  180
 F  S  A  F  P  F  F  F  F  F  C  V  F  P  L  I  S  R  T  G  Q  E  K  L  L  F  D  Q  K  Y   42
AAAATTATTAAGGGCGAGAAAAAAGAAAAGAAAAAAAATCAACGAGCAAACAGGAGAGAACACCAACAAAAAAGGGAAATTATGCGATTT  270
 K  I  I  K  G  E  K  K  E  K  K  K  N  Q  R  A  N  R  R  E  H  Q  Q  K  R  E  I  M  R  F   72
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT  360
 K  K  S  F  T  C  I  D  M  H  T  E  G  E  A  A  R  I  V  T  S  G  L  P  H  I  P  G  S  N  102
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT  430
 M  A  E  K  K  A  Y  L  Q  E  N  M  D  Y  L  R  R  G  I  M  L  E  P  R  G  H  D  D  M  F  132
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT  520
 G  A  F  L  F  D  P  I  E  E  G  A  D  L  G  M  V  F  M  D  T  G  G  Y  L  N  M  C  G  H  162
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA  610
 N  S  I  A  A  V  T  A  A  V  E  T  G  I  V  S  V  P  A  K  A  T  N  V  P  V  V  L  D  T  192
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT  700
 P  A  G  L  V  R  G  T  A  H  L  Q  S  G  T  E  S  E  V  S  N  A  S  I  I  N  V  P  S  F  222
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT  790
 L  Y  Q  Q  D  V  V  V  V  L  P  K  P  Y  G  E  V  R  V  D  I  A  F  G  G  N  F  F  A  I  252
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT  880
 V  P  A  E  Q  L  G  I  D  I  S  V  Q  N  L  S  R  L  Q  E  A  G  E  L  L  R  T  E  I  N  282
```

FIG. 5A

Replacement Figure 5B
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

```
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA   970
 R  S  V  K  V  Q  H  P  Q  L  P  H  I  N  T  V  D  C  V  E  I  Y  G  P  P  T  N  P  E  A   312
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT  1060
 N  Y  K  N  V  V  I  F  G  N  R  Q  A  D  R  S  P  C  G  T  G  T  S  A  K  M  A  T  L  Y   342
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA  1150
 A  K  G  Q  L  R  I  G  E  T  F  V  Y  E  S  I  L  G  S  L  F  Q  G  R  V  L  G  E  E  R   372
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG  1240
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   402
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT  1330
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q                              423
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT  1420

ATTATTAAATTTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT  1510

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG  1600

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT                                              1651
```

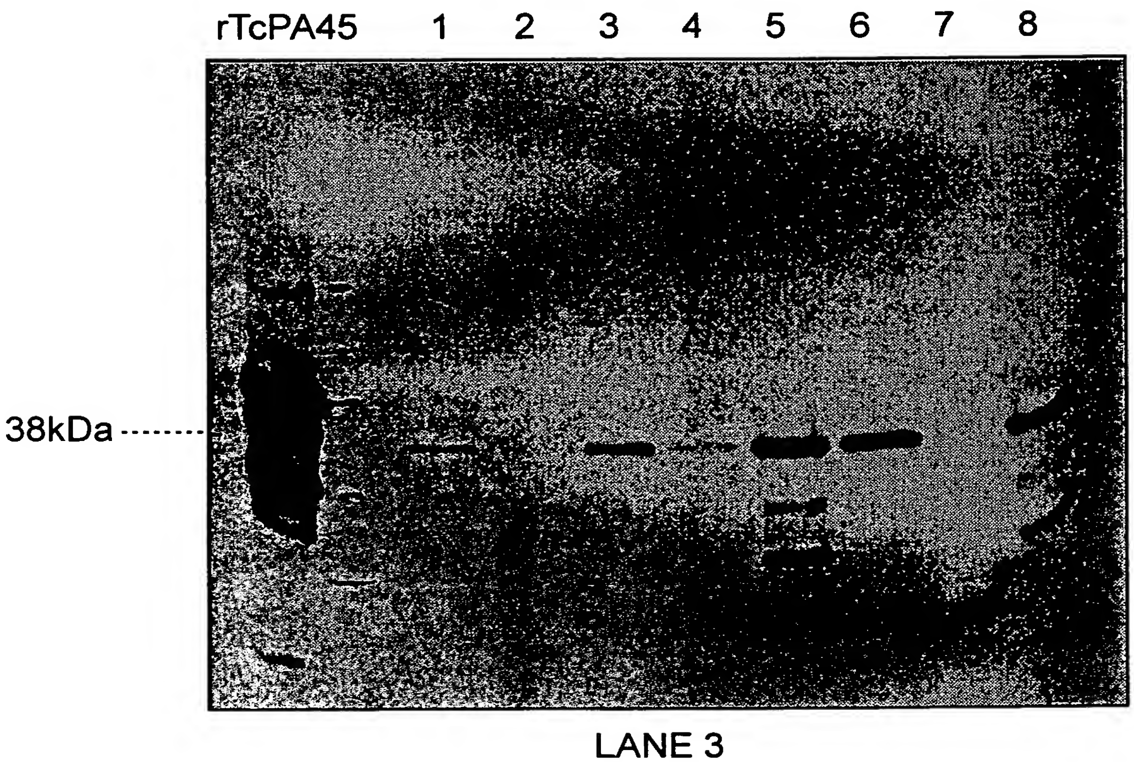
POLYADENILATION SITE

OBS: UNDERLINED THE SEQUENCED PEPTIDES USED TO DEDUCE DEGENERATED PRIMERS FOR CLONING

NUCLEOTIDE SEQUENCE AND PEPTIDE SEQUENCE TcPA45

FIG. 5B

WESTERN BLOT



SOLUBLE FRACTION OF EPIMASTIGOTES EXTRACT (CYTOSOLIC) REVEALED WITH ANTIBODY DIRECTED TO rTcPA45

----------- DEMONSTRATES THE EXISTANCE OF AN INTRACYTOPLASMIC FORM OF TcPA45 IN THE PARASITE

FIG. 6

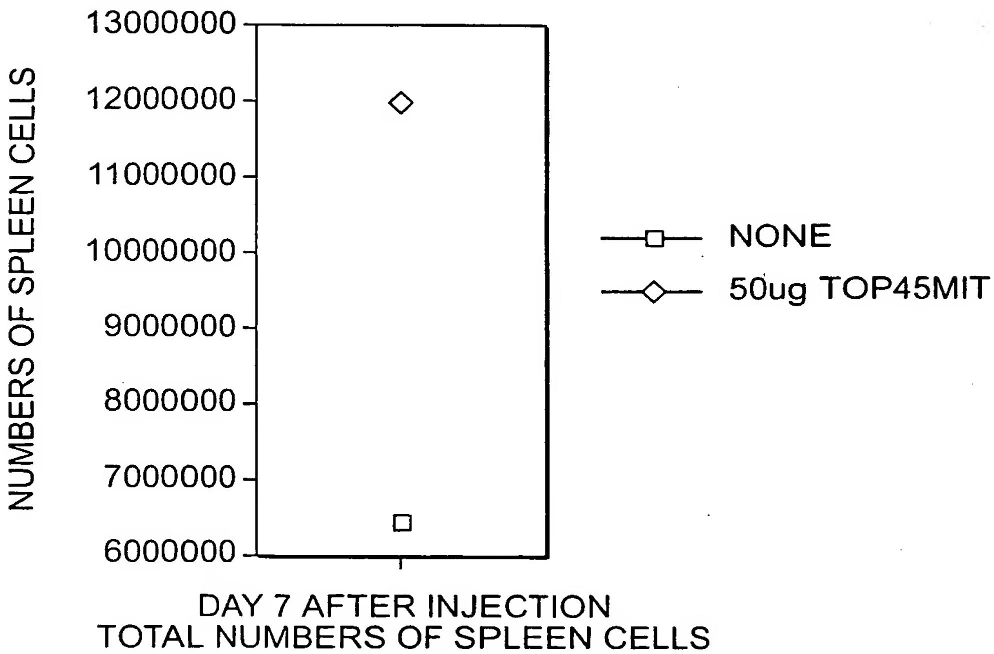

13000000
12000000
11000000
10000000
9000000
8000000
7000000
6000000
NUMBERS OF SPLEEN CELLS
NONE
50ug TOP45MIT
DAY 7 AFTER INJECTION
TOTAL NUMBERS OF SPLEEN CELLS

FIG. 7

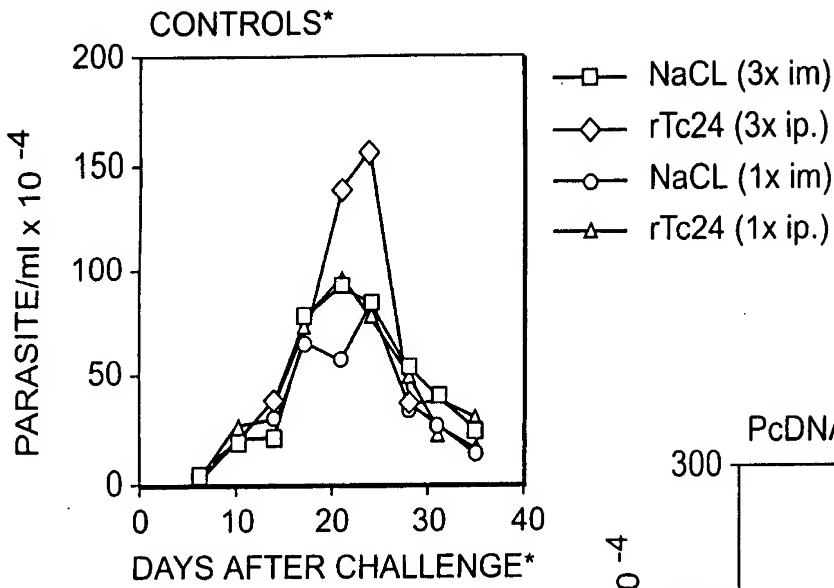

CONTROLS*
200
150
100
50
0
PARASITE/ml x 10 -4
0
10
20
30
40
DAYS AFTER CHALLENGE*
NaCL (3x im)
rTc24 (3x ip.)
NaCL (1x im)
rTc24 (1x ip.)

FIG. 8A

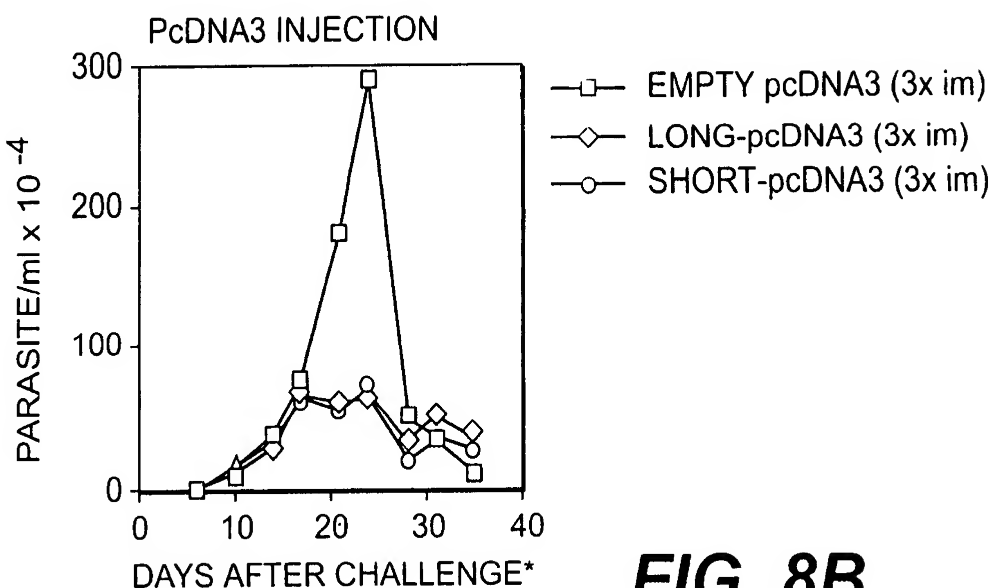

PcDNA3 INJECTION
300
200
100
0
PARASITE/ml x 10 -4
0
10
20
30
40
DAYS AFTER CHALLENGE*
EMPTY pcDNA3 (3x im)
LONG-pcDNA3 (3x im)
SHORT-pcDNA3 (3x im)

FIG. 8B

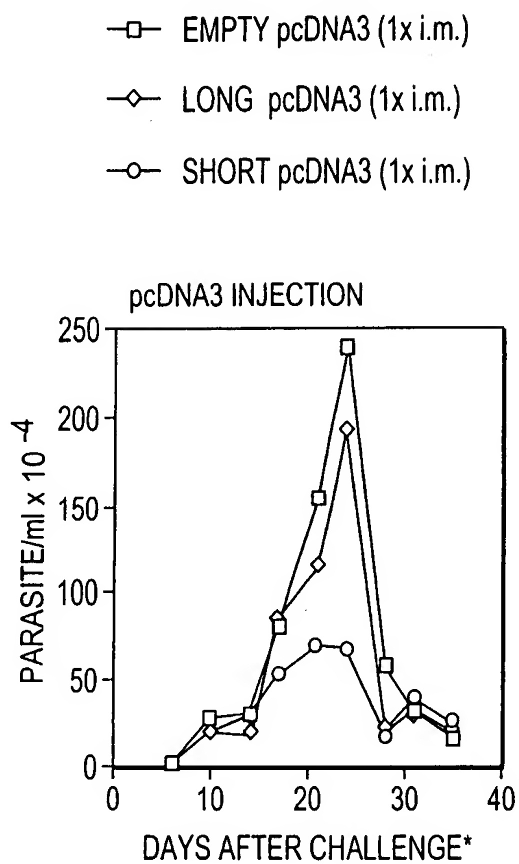


FIG. 8C

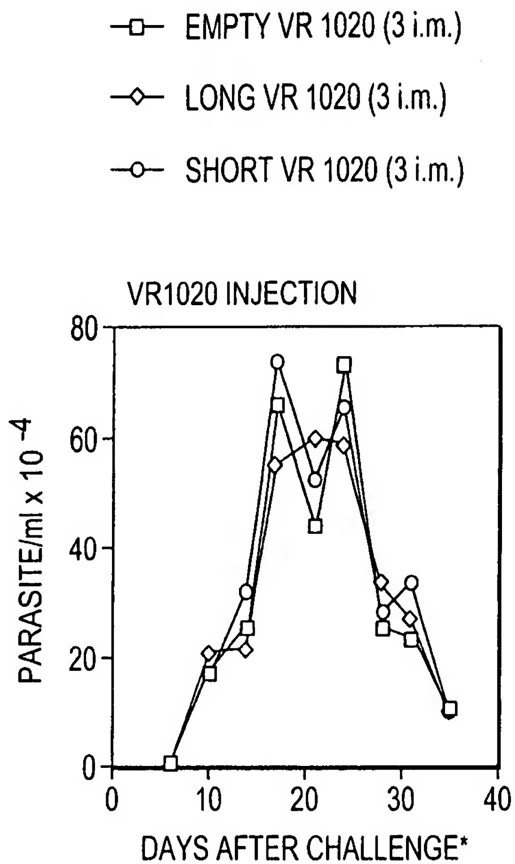


FIG. 8D

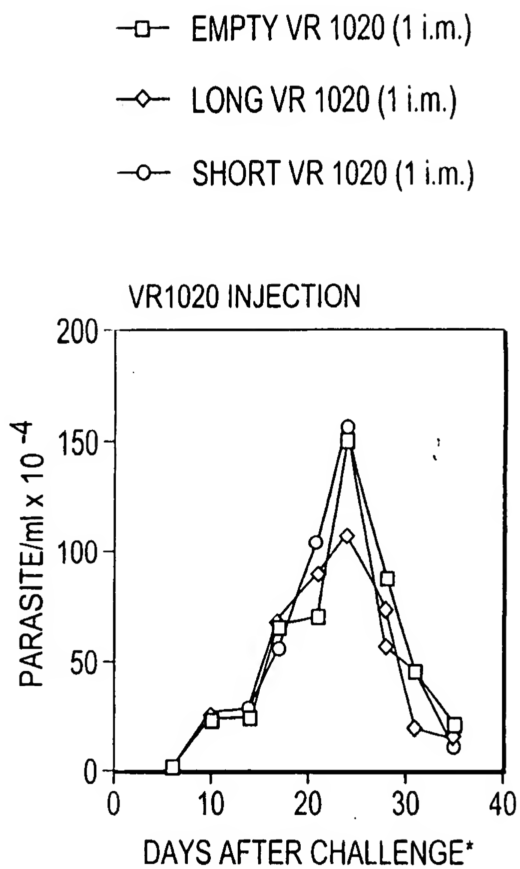


FIG. 8E

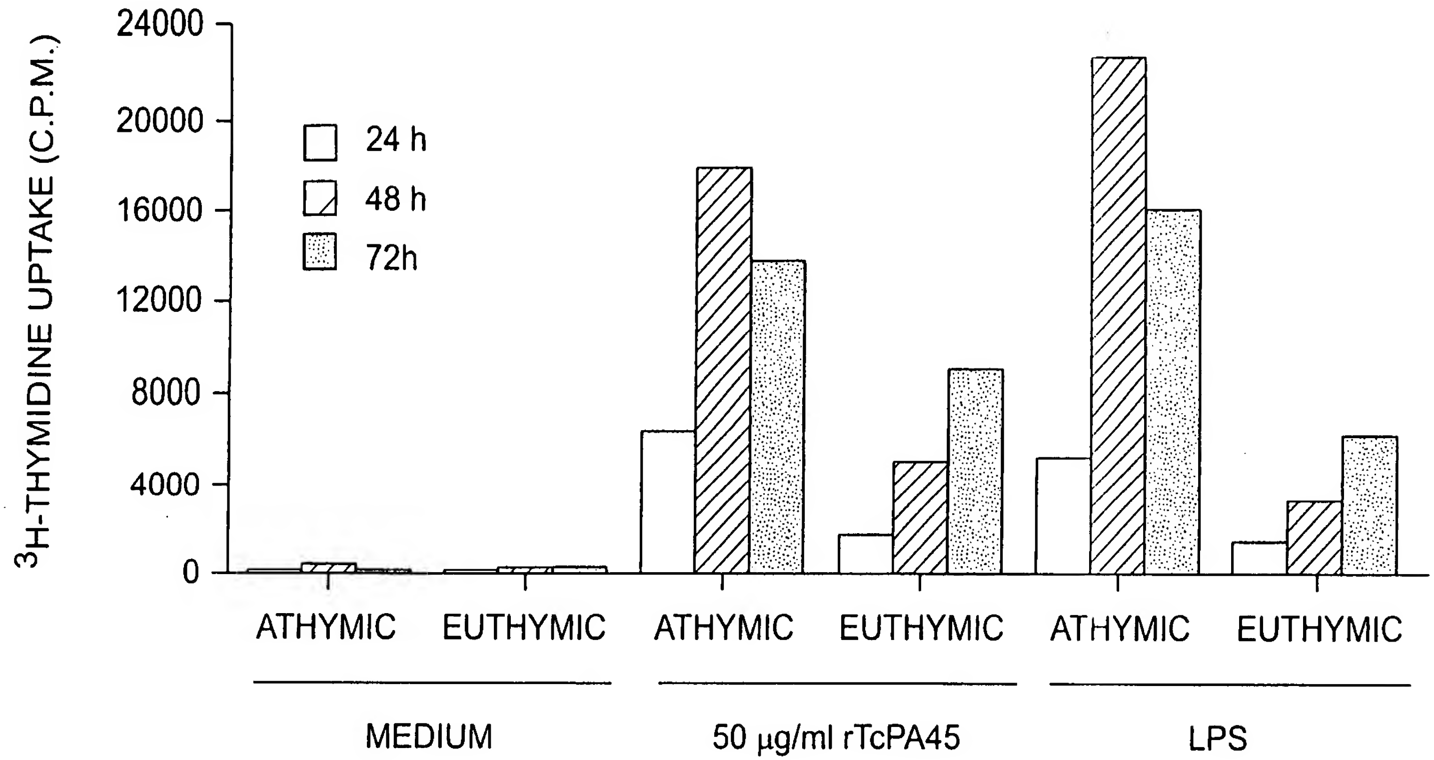

^{3}H-THYMIDINE UPTAKE (C.P.M.)
24000
20000
16000
12000
8000
4000
0
24 h
48 h
72h
ATHYMIC
EUTHYMIC
ATHYMIC
EUTHYMIC
ATHYMIC
EUTHYMIC
MEDIUM
50 μg/ml rTcPA45
LPS

FIG. 9

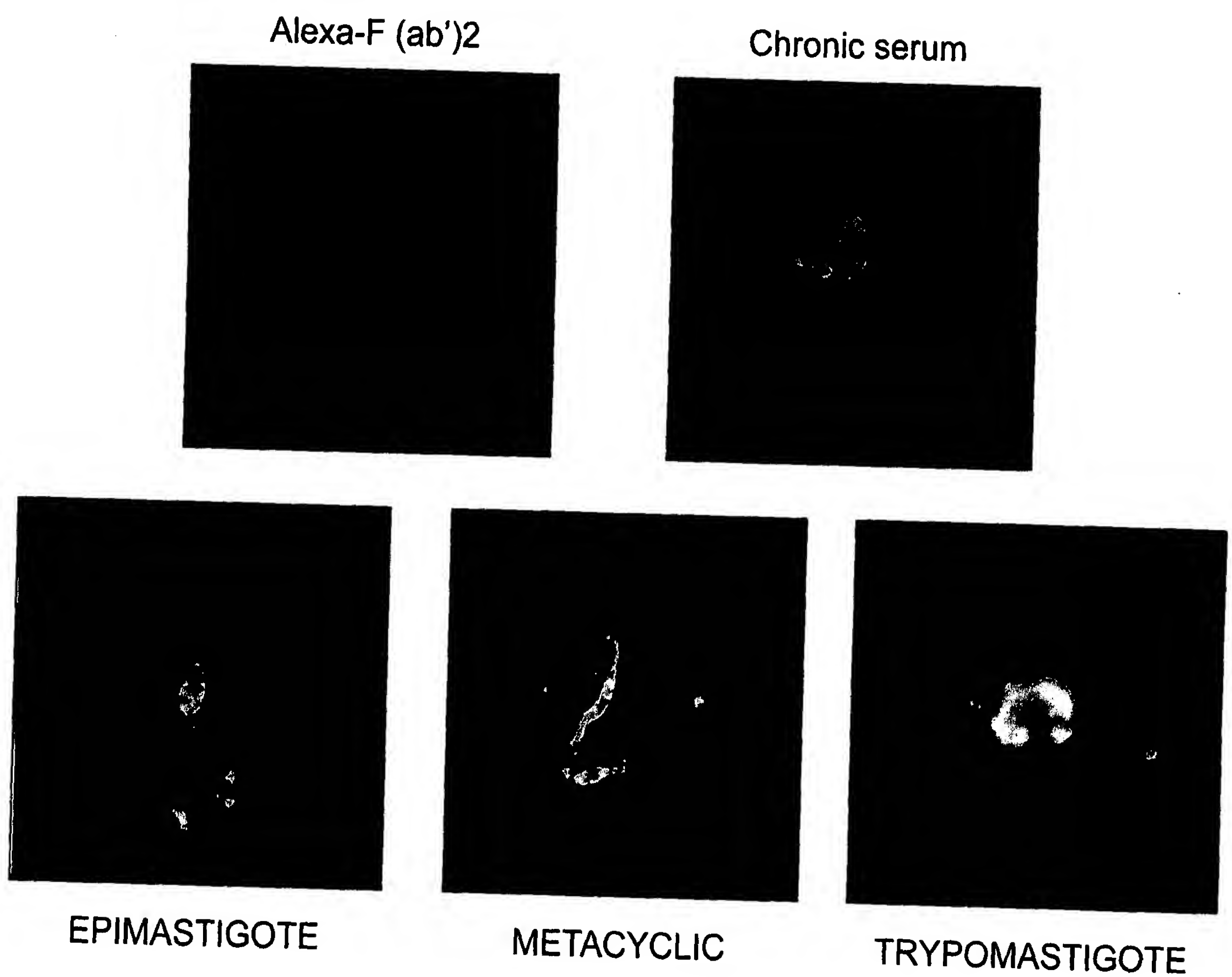

Alexa-F (ab')2
Chronic serum
EPIMASTIGOTE
METACYCLIC
TRYPOMASTIGOTE

FIG. 10A

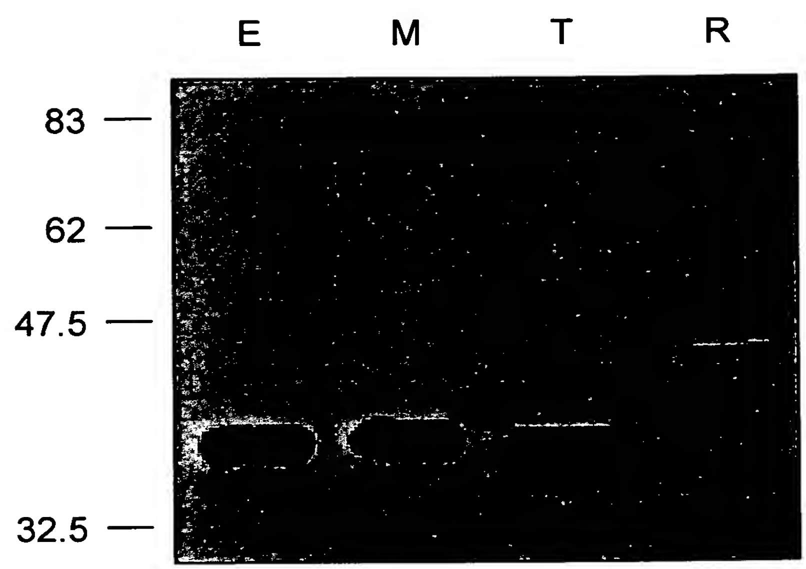


FIG. 10B

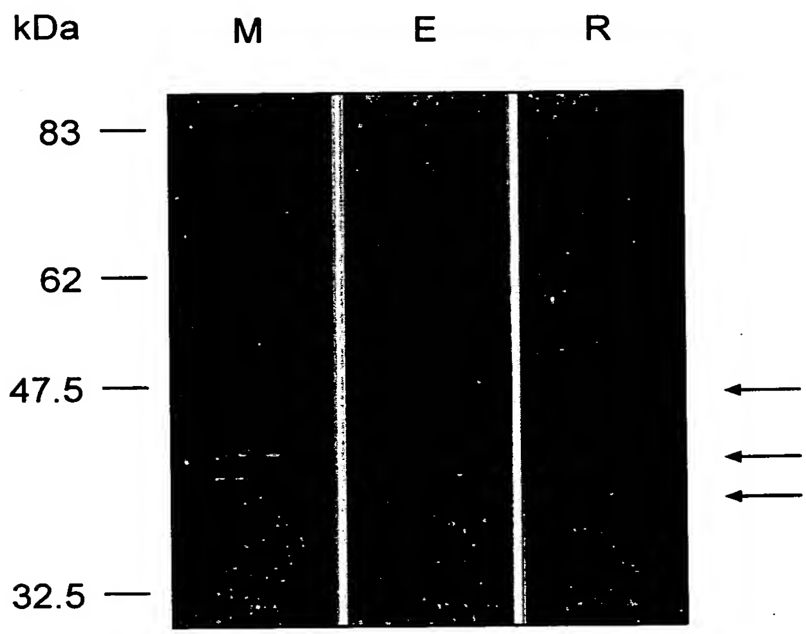


FIG. 10C

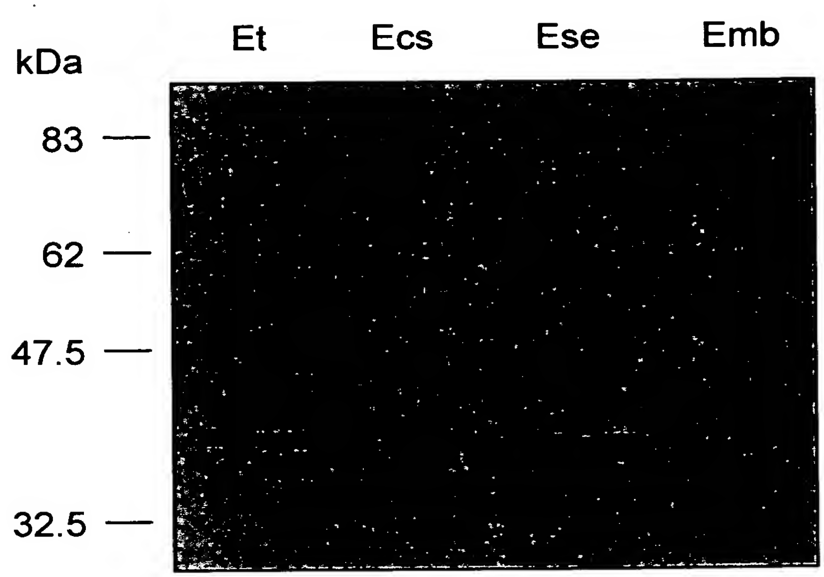


FIG. 10D

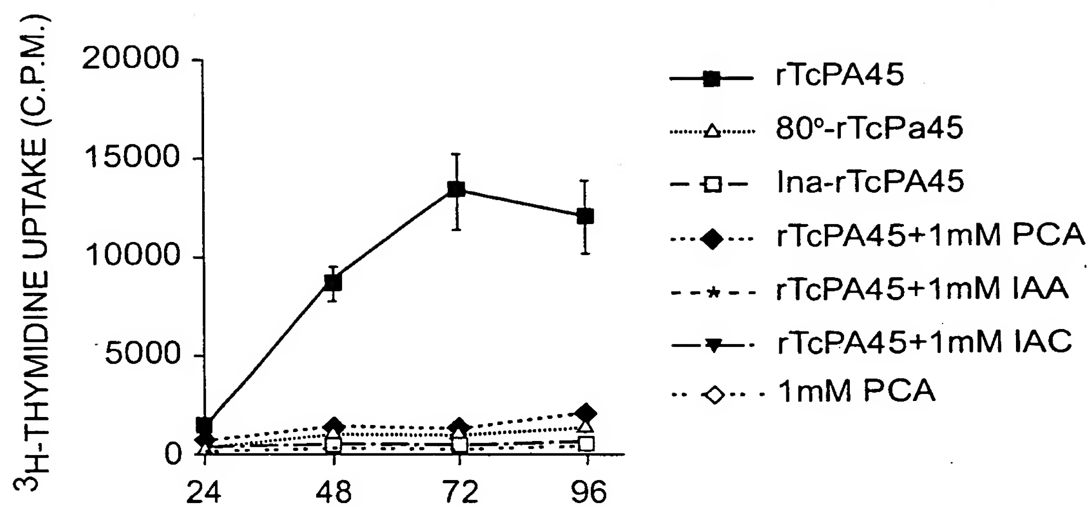

^{3}H-THYMIDINE UPTAKE (C.P.M.)
20000
15000
10000
5000
0
24
48
72
96
rTcPA45
80°-rTcPa45
Ina-rTcPA45
rTcPA45+1mM PCA
rTcPA45+1mM IAA
rTcPA45+1mM IAC
1mM PCA

FIG. 11A

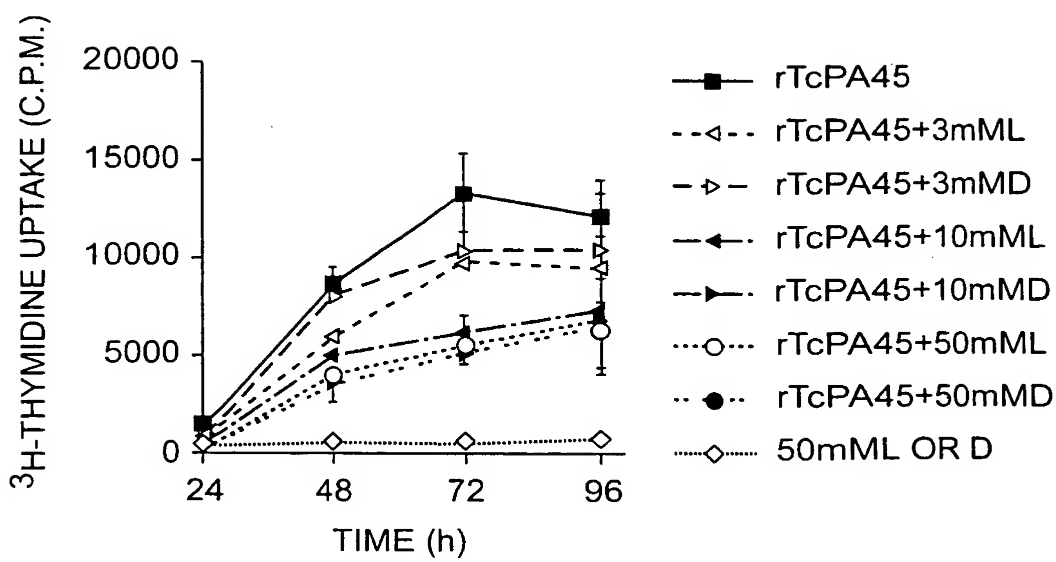

20000
15000
10000
5000
0
^{3}H-THYMIDINE UPTAKE (C.P.M.)
24
48
72
96
TIME (h)
rTcPA45
rTcPA45+3mML
rTcPA45+3mMD
rTcPA45+10mML
rTcPA45+10mMD
rTcPA45+50mML
rTcPA45+50mMD
50mML OR D

FIG. 11B

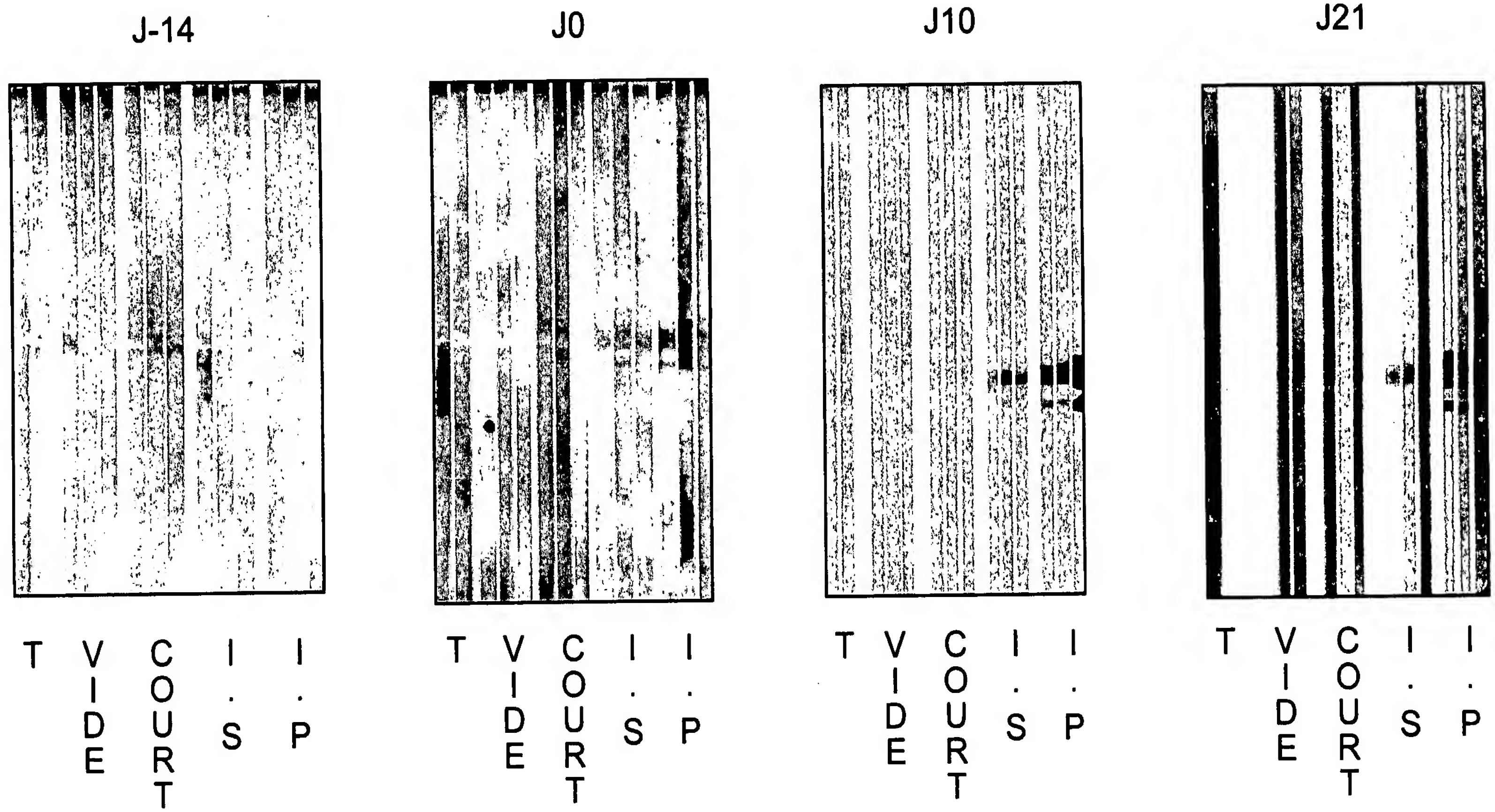


FIG. 12

Replacement Figure 13
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

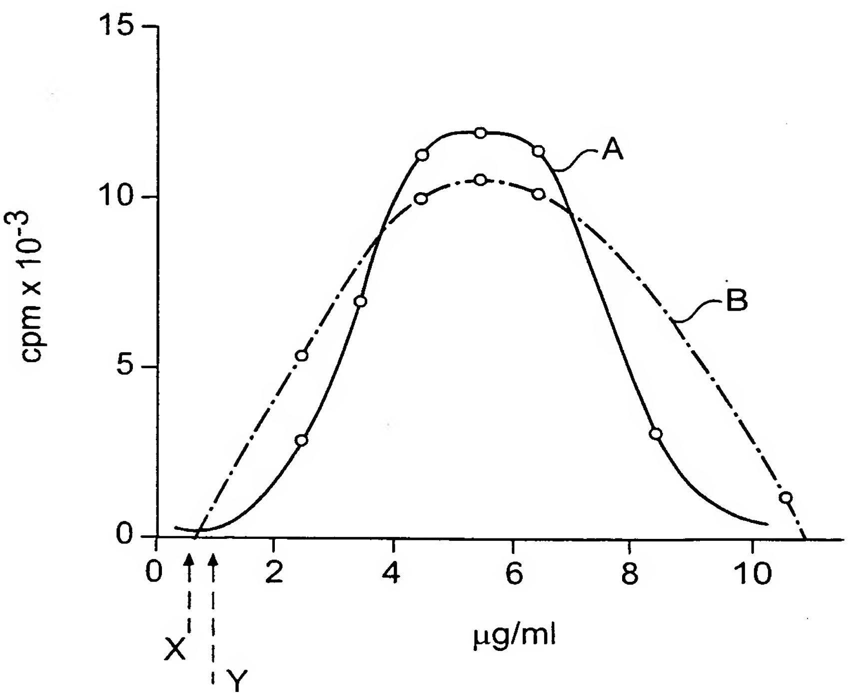


FIG. 13

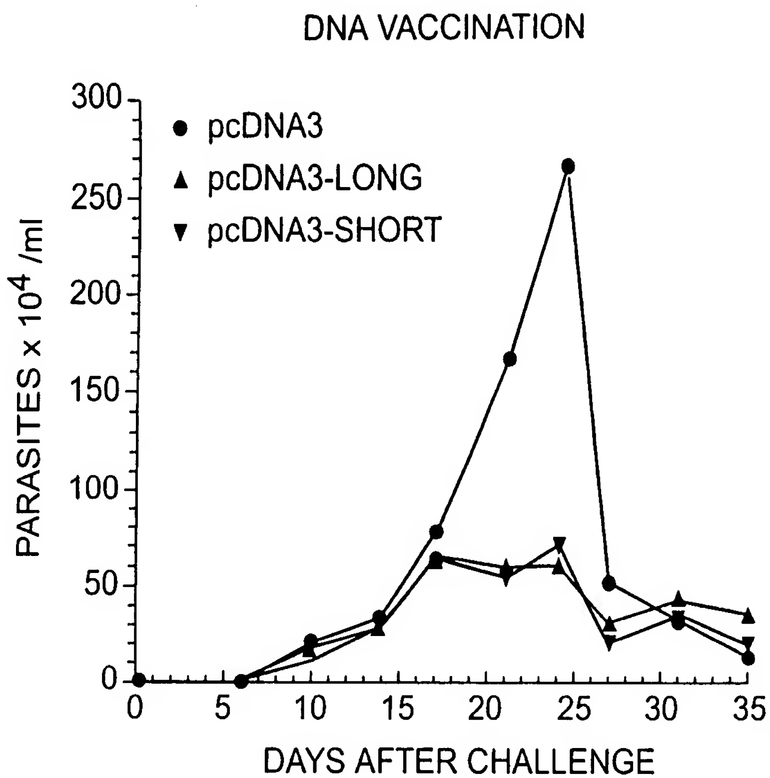


FIG. 14A

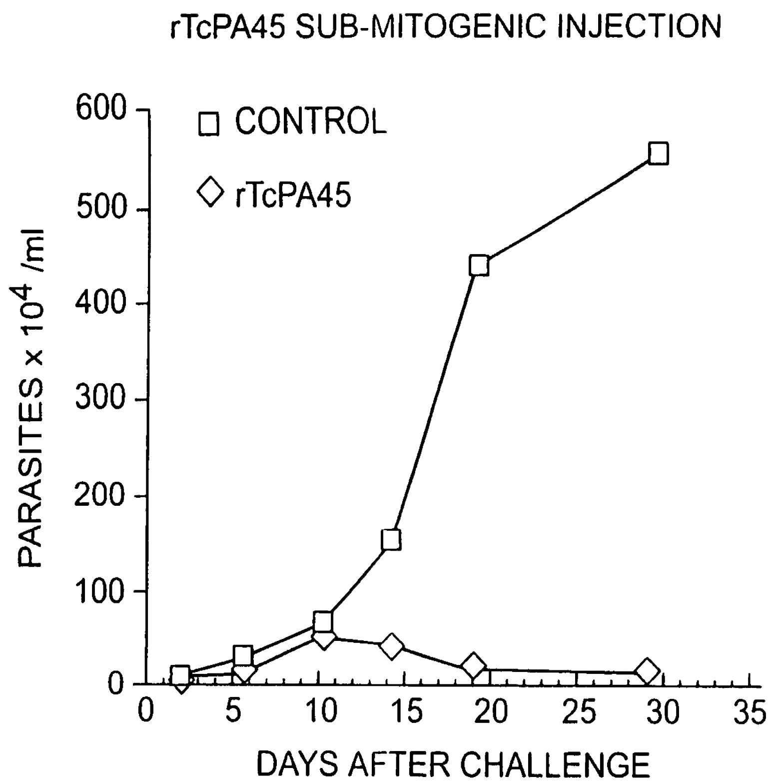


FIG. 14B

SEQ ID NO:2

Tc RTGQEKLLFDQKYKIIKGEKKEKKKNQRANRREHQQKREIMRFKKS 75

Tc FTCIDMHTEGEAARIVTSGLPHIPGSNMAEKKAYLQENMDYLRRGIMLEPRGHDDMFGAFLFDPIEEGADLGMVF 150

Tc MDTGGYLNMCGHNSIAAVTAAVETGIVSVPAKATNVPVVLDTPAGLVRGTAHLQSGTESEVSNASIINVPSFLYQ 225

Tc QDVVVVLPKPYGEVR*VDIAFGGNF*FAIVPAEQLGIDISVQNLSRLQEAGELLRTEINRSVKVQHPQLPHINTVDC 300

Tc VEIYGPPTNPEANYK*NVVIFGNR*QADR SPCGT GTSAKMATLYAKGQLRIGETFVYESILGSLFQGRV--LGEE 371

Tc RIPGVKVPVTKDAEEGMLVVTAEITGKAFIMGFNTMLFDPTDPFKNGFTLKQ* 423

FIG. 15

SEQ ID NO:4

```
Tc                                                                         MRFKKS   75
Tc  FTCIDMHTEGEAARIVTSGLPHIPGSNMAEKKAYLQENMDYLRRGIMLEPRGHDDMFGAFLFDPIEEGADLGMVF  150
Tc  MDTGGYLNMCGHNSIAAVTAAVETGIVSVPAKATNVPVVLDTPAGLVRGTAHLQSGTESEVSNASIINVPSFLYQ  225
Tc  QDVVVVLPKPYGEVRVDIAFGGNFFAIVPAEQLGIDISVQNLSRLQEAGELLRTEINRSVKVQHPQLPHINTVDC  300
Tc  VEIYGPPTNPEANYKNVVIFGNRQADR SPCGT GTSAKMATLYAKGQLRIGETFVYESILGSLFQGRV--LGEE  371
Tc   RIPGVKVPVTKDAEEGMLVVTAEITGKAFIMGFNTMLFDPTDPFKNGFTLKQ*                      423
```

FIG. 16

New Figure 17A
Continuation Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-01000

SEQ ID NO:7

POLYPYRIMIDINE RICH REGION

SPLICE LEADER ACCEPTOR SITES

SIGNAL PEPTIDE

```
CCTTTTTCTTTTTAAAAACAAAAAAAATTCCGGGGGGAATATGGAACAGGGTATATGCGTAAAAGTGTCTGTCCCAAACAAAAATTTTTT   90
                                                         M  R  K  S  V  C  P  K  Q  K  F  F   12
TTTTCCGCCTTCCCATTTTTTTTTTTTTTTTGTGTGTTTCCCTTGATCTCTCGAACAGGGCAGGAAAAGCTTCTGTTTGACCAAAAATAT  180
 F  S  A  F  P  F  F  F  F  F  C  V  F  P  L  I  S  R  T  G  Q  E  K  L  L  F  D  Q  K  Y   42
AAAATTATTAAGGGCGAGAAAAAAGAAAAGAAAAAAAAATCAACGAGCAAACAGGAGAGAACACCAACAAAAAAGGGAAATTATGCGATTT  270
 K  I  I  K  G  E  K  K  E  K  K  K  N  Q  R  A  N  R  R  E  K  Q  Q  K  R  E  I  M  R  F   72
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT  360
 K  K  S  F  T  C  I  D  M  H  T  E  G  E  A  A  R  I  V  T  S  G  L  P  H  I  P  G  S  N  102
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT  430
 M  A  E  K  K  A  Y  L  Q  E  N  M  D  Y  L  R  R  G  I  M  L  E  P  R  G  K  D  D  M  F  132
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT  520
 G  A  F  L  F  D  P  I  E  E  G  A  D  L  G  M  V  F  M  D  T  G  G  Y  L  N  M  C  G  H  162
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA  610
 N  S  I  A  A  V  T  A  A  V  E  T  G  I  V  S  V  P  A  K  A  T  N  V  P  V  V  L  D  T  192
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT  700
 P  A  G  L  V  R  G  T  A  R  L  Q  S  G  T  E  S  E  V  S  N  A  S  I  I  N  V  P  S  F  222
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT  790
 L  Y  Q  Q  D  V  V  V  V  L  P  K  P  Y  G  E  V  R  V  D  I  A  F  G  G  N  F  F  A  I  252
```

FIG. 17A

```
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT  880
 V  P  A  E  Q  L  G  I  D  I  S  V  Q  N  L  S  R  L  Q  E  A  G  E  L  L  R  T  E  I  N   282
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA  970
 R  S  V  K  V  Q  H  P  Q  L  P  H  I  N  T  V  D  C  V  E  I  Y  G  P  P  T  N  P  E  A   312
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT 1060
 N  Y  K  N  V  V  I  F  G  N  R  Q  A  D  R  S  P  C  G  T  G  T  S  A  K  M  A  T  L  Y   342
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA 1150
 A  K  G  Q  L  R  I  G  E  T  F  V  Y  E  S  I  L  G  S  L  F  Q  G  R  V  L  G  E  E  R   372
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG 1240
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   402
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT 1330
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q  *                            423
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT 1420

ATTATTAAATTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT 1510

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG 1600

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT                                             1651
```

POLYADENILATION SITE

Obs: UNDERLINED THE SEQUENCED PEPTIDES USED TO DEDUCE DEGENERATED PRIMERS FOR CLONING

(b) NUCLEOTIDE SEQUENCE AND PEPTIDE SEQUENCE TcPA45

FIG. 17B

SEQ ID NO:8

```
                                                         ATGCGTAAAAGTGTCTGTCCCAAACAAAAATTTTTT  90
                                                           M  R  K  S  V  C  P  K  Q  K  F  F  12
TTTTCCGCCTTCCCATTTTTTTTTTTTTTTGTGTGTTTCCCTTGATCTCTCGAACAGGGCAGGAAAAGCTTCTGTTTGACCAAAAATAT 180
 F  S  A  F  P  F  F  F  F  F  C  V  F  P  L  I  S  R  T  G  Q  E  K  L  L  F  D  Q  K  Y  42
AAAATTATTAAGGGCGAGAAAAAAGAAAAGAAAAAAAATCAACGAGCAAACAGGAGAGAACACCAACAAAAAAGGGAAATTATGCGATTT 270
 K  I  I  K  G  E  K  K  E  K  K  K  N  Q  R  A  N  R  R  E  H  Q  Q  K  R  E  I  M  R  F  72
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT 360
 K  K  S  F  T  C  I  D  M  H  T  E  G  E  A  A  R  I  V  T  S  G  L  P  H  I  P  G  S  N 102
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT 430
 M  A  E  K  K  A  Y  L  Q  E  N  M  D  Y  L  R  R  G  I  M  L  E  P  R  G  H  D  D  M  F 132
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT 520
 G  A  F  L  F  D  P  I  E  E  G  A  D  L  G  M  V  F  M  D  T  G  G  Y  L  N  M  C  G  H 162
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA 610
 N  S  I  A  A  V  T  A  A  V  E  T  G  I  V  S  V  P  A  K  A  T  N  V  P  V  V  L  D  T 192
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT 700
 P  A  G  L  V  R  G  T  A  H  L  Q  S  G  T  E  S  E  V  S  N  A  S  I  I  N  V  P  S  F 222
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT 790
 L  Y  Q  Q  D  V  V  V  V  L  P  K  P  Y  G  E  V  R  V  D  I  A  F  G  G  N  F  F  A  I 252
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT 880
 V  P  A  E  Q  L  G  I  D  I  S  V  Q  N  L  S  R  L  Q  E  A  G  E  L  L  R  T  E  I  N 282
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA 970
 R  S  V  K  V  Q  H  P  Q  L  P  H  I  N  T  V  D  C  V  E  I  Y  G  P  P  T  N  P  E  A 312
```

FIG. 18A

```
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT 1060
 N  Y  K  N  V  V  I  F  G  N  R  Q  A  D  R  S  P  C  G  T  G  T  S  A  K  M  A  T  L  Y   342
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA 1150
 A  K  G  Q  L  R  I  G  E  T  F  V  Y  E  S  I  L  G  S  L  F  Q  G  R  V  L  G  E  E  R   372
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG 1240
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   402
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT 1330
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q  *                            423
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT 1420

ATTATTAAATTTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT 1510

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG 1600

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT                                              1651
```

POLYADENILATION SITE

Obs: UNDERLINED THE SEQUENCED PEPTIDES USED TO DEDUCE DEGENERATED PRIMERS FOR CLONING

NUCLEOTIDE SEQUENCE AND PEPTIDE SEQUENCE TcPA45

FIG. 18B

SEQ ID NO:9

```
                                                         CGAACAGGGCAGGAAAAGCTTCTGTTTGACCAAAAATAT  270
                                                          R  T  G  Q  E  K  L  L  F  D  Q  K  Y   72
AAAATTATTAAGGGCGAGAAAAAAGAAAAGAAAAAAAAATCAACGAGCAAACAGGAGAGAACACCAACAAAAAAGGGAAATTATGCGATTT  360
 K  I  I  K  G  E  K  K  E  K  K  K  N  Q  R  A  N  R  R  E  H  Q  Q  K  R  E  I  M  R  F  102
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT  430
 K  K  S  F  T  C  I  D  M  H  T  E  G  E  A  A  R  I  V  T  S  G  L  P  H  I  P  G  S  N  132
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT  520
 M  A  E  K  K  A  Y  L  Q  E  N  M  D  Y  L  R  R  G  I  M  L  E  P  R  G  H  D  D  M  F  162
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT  610
 G  A  F  L  F  D  P  I  E  E  G  A  D  L  G  M  V  F  M  D  T  G  G  Y  L  N  M  C  G  H  192
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA  700
 N  S  I  A  A  V  T  A  A  V  E  T  G  I  V  S  V  P  A  K  A  T  N  V  P  V  V  L  D  T  222
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT  790
 P  A  G  L  V  R  G  T  A  H  L  Q  S  G  T  E  S  E  V  S  N  A  S  I  I  N  V  P  S  F  252
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT  880
 L  Y  Q  Q  D  V  V  V  V  L  P  K  P  Y  G  E  V  R  V  D  I  A  F  G  G  N  F  F  A  I  282
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT  970
 V  P  A  E  Q  L  G  I  D  I  S  V  Q  N  L  S  R  L  Q  E  A  G  E  L  L  R  T  E  I  N  312
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA 1060
 R  S  V  K  V  Q  H  P  Q  L  P  H  I  N  T  V  D  C  V  E  I  Y  G  P  P  T  N  P  E  A  342
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT 1150
 N  Y  K  N  V  V  I  F  G  N  R  Q  A  D  R  S  P  C  G  T  G  T  S  A  K  M  A  T  L  Y  372
```

FIG. 19A

```
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA 1240
 A  K  G  Q  L  R  I  G  E  T  F  V  Y  E  S  I  L  G  S  L  F  Q  G  R  V  L  G  E  E  R   402
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG 1330
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   423
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT 1420
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q  *
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT 1510

ATTATTAAATTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT 1600

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG 1651

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT
```

POLYADENILATION SITE

Obs: UNDERLINED THE SEQUENCED PEPTIDES USED TO DEDUCE DEGENERATED PRIMERS FOR CLONING

NUCLEOTIDE SEQUENCE AND PEPTIDE SEQUENCE TcPA45

FIG. 19B

SEQ ID NO:10

SIGNAL PEPTIDE

ATGCGTAAAAGTGTCTGTCCCAAACAAAAATTTTTT

TTTTCCGCCTTCCCATTTTTTTTTTTTTTTTGTGTGTTTCCCTTGATCTCT

NUCLEOTIDE SEQUENCE OF SIGNAL SEQUENCE TcPA45

FIG. 20

SEQ ID NO:11

```
                                                                                    ATGCGATTT  360
                                                                                      M  R  F  102
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT  430
 K  K  S  F  T  C  I  D  M  H  T  E  G  E  A  A  R  I  V  T  S  G  L  P  H  I  P  G  S  N  132
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT  520
 M  A  E  K  K  A  Y  L  Q  E  N  M  D  Y  L  R  R  G  I  M  L  E  P  R  G  H  D  D  M  F  162
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT  610
 G  A  F  L  F  D  P  I  E  E  G  A  D  L  G  M  V  F  M  D  T  G  G  Y  L  N  M  C  G  H  192
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA  700
 N  S  I  A  A  V  T  A  A  V  E  T  G  I  V  S  V  P  A  K  A  T  N  V  P  V  V  L  D  T  222
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT  790
 P  A  G  L  V  R  G  T  A  H  L  Q  S  G  T  E  S  E  V  S  N  A  S  I  I  N  V  P  S  F  252
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT  880
 L  Y  Q  Q  D  V  V  V  V  L  P  K  P  Y  G  E  V  R  V  D  I  A  F  G  G  N  F  F  A  I  282
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT  970
 V  P  A  E  Q  L  G  I  D  I  S  V  Q  N  L  S  R  L  Q  E  A  G  E  L  L  R  T  E  I  N  312
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA 1060
 R  S  V  K  V  Q  H  P  Q  L  P  H  I  N  T  V  D  C  V  E  I  Y  G  P  P  T  N  P  E  A  342
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT 1150
 N  Y  K  N  V  V  I  F  G  N  R  Q  A  D  R  S  P  C  G  T  G  T  S  A  K  M  A  T  L  Y  372
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA 1240
 A  K  G  Q  L  R  I  G  E  T  F  V  Y  E  S  I  L  G  S  L  F  Q  G  R  V  L  G  E  E  R  402
```

FIG. 21A

```
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG 1330
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   423
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT 1420
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q  *
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT 1510

ATTATTAAATTTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT 1600

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG 1651

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT
```

FIG. 21B